

THE INVENTION CLAIMED IS:

1. An apparatus for restricting axial leakage flow along a rotating shaft and providing necessary damping to improve rotor stability comprising an abradable labyrinth seal and a damper seal adjacent thereto.
2. The apparatus according to claim 1, wherein the abradable labyrinth is upstream of the damper seal.
3. The apparatus according to claim 1, wherein there is a plurality of labyrinth and damper seal segments adjacent and interleaved along the shaft.
4. The apparatus according to any one of claims 1 to 3, wherein the damper seal segment is selected from the group slotted pocket damper seals, honeycomb seals, and hole pattern seals.
5. The apparatus according to any one of claims 1 to 3, wherein the abradable labyrinth seal segment comprises a plurality of annular teeth extending from the shaft and an abradable stator section radially outward of said teeth.
6. An apparatus for restricting leakage flow along a rotating shaft and improving rotor stability comprising:
an axial section on the shaft having at least one toothed subsection having a plurality of annular teeth and at least one adjacent smooth subsection,
there being a cylindrical abradable stationary surface radially outward of the toothed subsection and a damping means radially outward of the smooth land subsection.
7. The apparatus according to claim 6, wherein the damping means is a slotted pocket damper seal.
8. The apparatus according to claim 6, wherein the damping means is selected from the group honeycomb seals and hole pattern seals.